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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MARCHESCHI, MICHAEL A

ART UNIT	PAPER NUMBER
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1755

DATE MAILED: 04/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/804,297

Applicant(s)

MIDDLEMISS, STEWART

Examiner

Michael A Marcheschi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/19/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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Claims 6, 7, 10-17, 20 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 is indefinite as to the limitation “less than 10% of a corresponding resistance” because this limitation does not clearly define the scope of the claim when read in light of the entire claim. What is a corresponding resistance? Is applicant trying to compare the resistance of the inventive material with that of a control material? If so, the claim should be rewritten to clearly define what is meant.

Claim 6 is also indefinite as to the limitation “substantially similar” because the examiner is unclear as to what this means. What does “substantially similar” mean? How is it similar and what does “substantially” encompass when used to modify this.

Claim 6 is also indefinite as to the limitation “substantially only” because the examiner is unclear as to what this means. What does “substantially only” mean? What does “substantially” encompass when used to modify this. Are only these diamonds present? If not, what else is present?

Claim 7 is indefinite as to the limitation “15 times greater than a corresponding thermal conductivity” because this limitation does not clearly define the scope of the claim when read in light of the entire claim. What is a corresponding thermal conductivity? Is applicant trying to compare the thermal conductivity of the inventive material with that of a control material? If so, the claim should be rewritten to clearly define what is meant.

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Claim 7 is also indefinite as to the limitation “substantially similar” because the examiner is unclear as to what this means. What does “substantially similar” mean? How is it similar and what does “substantially” encompass when used to modify this.

Claim 7 is also indefinite as to the limitation “substantially only” because the examiner is unclear as to what this means. What does “substantially only” mean? What does “substantially” encompass when used to modify this. Are only these diamonds present? If not, what else is present?

Claim 10 is indefinite as to the phrase “wherein after sintering...comprising...layer” because this limitation does not make sense, thus rendering the scope of the claim unclear.

Claim 20 is indefinite because the examiner is unclear as to how it is converted.

The other claims are indefinite because they depend on indefinite claims.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 1-8, 10-14 and 16 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 11-100296.

The JP reference teaches in the entire document, specifically the abstract, a polycrystalline diamond material being doped with at least one of the claimed additives (formation of a P-type semiconductive material).

The claimed invention is anticipated by the reference because the reference teaches a material which comprises all of the claimed components. With respect to the characteristics (resistance and thermal conductivity), it is the examiners position that these characteristics are inherent because the material appears to be the same and the same material inherently has the same characteristics. Burden is upon applicant to show otherwise. In the alternative, no patentable distinction is seen to exist between the reference and the claimed invention absent evidence to the contrary. In addition, absent evidence to the contrary and assuming *arguendo* about the inherency argument above, the examiners fails to see any distinction between the claimed material and the reference material and therefore it is the examiners position that the characteristics (resistance and thermal conductivity) are expected and therefore obvious because they are dependent on the material which is the same absent evidence to the contrary. In some of the claims, applicants use process limitations to define the product and "product-by-process" claims do not patentably distinguish the product even though made by a different process. *In re Thorpe* 227 USPQ 964. In view of this any process limitations (i.e. how the material is formed) is immaterial to the diamond material claims.

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Claims 1-8, 10-14 and 16 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Mort et al.

Mort et al. teaches in the abstract, column 5, line 28 and the claims, a polycrystalline diamond material (a layer is a material) being doped with at least one of the claimed additives (formation of a P-type semiconductive material).

The claimed invention is anticipated by the reference because the reference teaches a material which comprises all of the claimed components. The examiners acknowledges that this reference is a transistor but the intermediate product (i.e. diamond layer (material)) is known, irrespective of what it is used for or to make. In other words, since a doped diamond layer using the claimed dopants is known in the art, the instantly claimed material does not define patentable subject matter. With respect to the characteristics (resistance and thermal conductivity), it is the examiners position that these characteristics are inherent because the material appears to be the same and the same material inherently has the same characteristics. Burden is upon applicant to show otherwise. In the alternative, no patentable distinction is seen to exist between the reference and the claimed invention absent evidence to the contrary. In addition, absent evidence to the contrary and assuming *arguendo* about the inherency argument above, the examiners fails to see any distinction between the claimed material and the reference material and therefore it is the examiners position that the characteristics (resistance and thermal conductivity) are expected and therefore obvious because they are dependent on the material which is the same absent evidence to the contrary. In some of the claims, applicants use process limitations to define the product and "product-by-process" claims do not patentably distinguish the product even though made by a different process. *In re Thorpe* 227 USPQ 964. In view of

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this any process limitations (i.e. how the material is formed) is immaterial to the diamond material claims.

Claims 1-8, 10-14 and 16 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bovenkerk (321).

Bovenkerk teaches in the abstract and column 3, line 37-column 4, line 48, a polycrystalline diamond material being doped with at least one of the claimed additives.

The claimed invention is anticipated by the reference because the reference teaches a material which comprises all of the claimed components. The examiners acknowledges that this reference is directed to a thermistor but the thermistor comprises the doped diamond material and thus the final product can broadly be interpreted to be a doped diamond material. With respect to the formation of a P-type semiconductive material, since the specific dopant used influence this property and the same dopant is used, it is the examiners position that this limitation will be inherently met. With respect to the characteristics (resistance and thermal conductivity), it is the examiners position that these characteristics are inherent because the material appears to be the same and the same material inherently has the same characteristics. Burden is upon applicant to show otherwise. In the alternative, no patentable distinction is seen to exist between the reference and the claimed invention absent evidence to the contrary. In addition, absent evidence to the contrary and assuming *arguendo* about the inherency argument above, the examiners fails to see any distinction between the claimed material and the reference material and therefore it is the examiners position that the characteristics (resistance and thermal conductivity) are expected and therefore obvious because they are dependent on the material

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which is the same absent evidence to the contrary. In some of the claims, applicants use process limitations to define the product and "product-by-process" claims do not patentably distinguish the product even though made by a different process. *In re Thorpe* 227 USPQ 964. In view of this any process limitations (i.e. how the material is formed) is immaterial to the diamond material claims.

Claims 1-8, 10-14 and 16 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bunshsh et al.

Bunshah et al. teaches in the abstract and column 6, line 31-column 8, line 15, a polycrystalline diamond film (i.e. material) being doped with at least one of the claimed additives. The film can be of P-type semiconductive material and can have the claimed resistance).

The claimed invention is anticipated by the reference because the reference teaches a material which comprises all of the claimed components. With respect to the characteristics (comparison of resistance and thermal conductivity), it is the examiners position that these characteristics are inherent because the material appears to be the same and the same material inherently has the same characteristics when compared as claimed. Burden is upon applicant to show otherwise. In the alternative, no patentable distinction is seen to exist between the reference and the claimed invention absent evidence to the contrary. In addition, absent evidence to the contrary and assuming arguendo about the inherency argument above, the examiners fails to see any distinction between the claimed material and the reference material and therefore it is the examiners position that the characteristics (comparison of resistance and thermal

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conductivity) are expected and therefore obvious because they are dependent on the material which is the same absent evidence to the contrary. In some of the claims, applicants use process limitations to define the product and "product-by-process" claims do not patentably distinguish the product even though made by a different process. *In re Thorpe* 227 USPQ 964. In view of this any process limitations (i.e. how the material is formed) is immaterial to the diamond material claims.

Claims 1-8, 10-14 and 16 are rejected under 35 U.S.C. 103(a) as obvious over Giardini et al.

Giardini et al. teaches in the entire document, specifically in column 4, lines 15-20 and the claims, a diamond material being doped with at least one of the claimed additives (semiconducting)

The reference teaches a doped diamond material and although it is not stated that it is polycrystalline, it is the examiners position that absent any crystallinity teaching, the material can encompass polycrystals absent evidence to the contrary. With respect to the formation of a P-type semiconductive material, since the specific dopant used influence this property and the same dopant is used, it is the examiners position that this limitation will be met. With respect to the characteristics (resistance and thermal conductivity), it is the examiners position that these characteristics are expected and therefore obvious because the material appears to be the same and the same material is expected to have the same characteristics. Burden is upon applicant to show otherwise. In some of the claims, applicants use process limitations to define the product and "product-by-process" claims do not patentably distinguish the product even though made by

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a different process. *In re Thorpe* 227 USPQ 964. In view of this any process limitations (i.e. how the material is formed) is immaterial to the diamond material claims.

Claims 1, 3-20 and 22 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bovenkerk (276).

The reference teaches in column 1, line 9-column 2, line 50, column 5, lines 45-46 and the claims, a drilling tool (drill bit) comprising a polycrystalline mass of doped diamond attached to a substrate. A metal binder can be used in conjunction with the diamond mass and the diamond comprises 99+% by volume of the mass (i.e. binder is the balance).

The claimed invention is anticipated by the reference because the reference teaches a material which comprises all of the claimed components. With respect to the formation of a P-type semiconductive material, since the specific dopant used influence this property and the same dopant is used, it is the examiners position that this limitation will be inherently met. With respect to the characteristics (resistance and thermal conductivity), it is the examiners position that these characteristics are inherent because the material appears to be the same and the same material inherently has the same characteristics. Burden is upon applicant to show otherwise. In the alternative, no patentable distinction is seen to exist between the reference and the claimed invention absent evidence to the contrary. With respect to the binder content of claim 15 and the material being substantially void of a binder, claims 8 and 16, the teaching of 99+% by volume diamond reads on 99.999% diamond and the balance being a binder. This small amount of reads on "substantially void of" and reads on a binder in an amount of less than 10 wt. % (when converted). In addition, absent evidence to the contrary and assuming *arguendo* about the

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inherency argument above, the examiners fails to see any distinction between the claimed material and the reference material and therefore it is the examiners position that the characteristics (resistance and thermal conductivity) are expected and therefore obvious because they are dependent on the material which is the same absent evidence to the contrary. In some of the claims, applicants use process limitations to define the product and "product-by-process" claims do not patentably distinguish the product even though made by a different process. *In re Thorpe* 227 USPQ 964. In view of this any process limitations (i.e. how the material is formed) is immaterial to the diamond material claims.

Claims 1, 3-14, 16-20 and 22 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Collins.

The reference teaches in the abstract, column 2, lines 1-40 and the claims, a drilling tool (drill bit) comprising a polycrystalline layer (material) of doped diamond attached to a substrate. The claimed invention is anticipated by the reference because the reference teaches a material which comprises all of the claimed components. With respect to the formation of a P-type semiconductive material, since the specific dopant used influence this property and the same dopant is used, it is the examiners position that this limitation will be inherently met. With respect to the characteristics (resistance and thermal conductivity), it is the examiners position that these characteristics are inherent because the material appears to be the same and the same material inherently has the same characteristics. Burden is upon applicant to show otherwise. In the alternative, no patentable distinction is seen to exist between the reference and the claimed invention absent evidence to the contrary. In addition, absent evidence to the contrary and

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assuming arguendo about the inherency argument above, the examiners fails to see any distinction between the claimed material and the reference material and therefore it is the examiners position that the characteristics (resistance and thermal conductivity) are expected and therefore obvious because they are dependent on the material which is the same absent evidence to the contrary. In some of the claims, applicants use process limitations to define the product and "product-by-process" claims do not patentably distinguish the product even though made by a different process. *In re Thorpe* 227 USPQ 964. In view of this any process limitations (i.e. how the material is formed) is immaterial to the diamond material claims.

In view of the teachings as set forth above, it is the examiners position that the references reasonably teach or suggest the limitations of the rejected claims.

"A reference is good not only for what it teaches but also for what one of ordinary skill might reasonably infer from the teachings. *In re Opprecht* 12 USPQ 2d 1235, 1236 (CAFC 1989); *In re Bode* USPQ 12; *In re Lamberti* 192 USPQ 278; *In re Bozek* 163 USPQ 545, 549 (CCPA 1969); *In re Van Mater* 144 USPQ 421; *In re Jacoby* 135 USPQ 317; *In re LeGrice* 133 USPQ 365; *In re Preda* 159 USPQ 342 (CCPA 1968)". In addition, "A reference can be used for all it realistically teaches and is not limited to the disclosure in its preferred embodiments" See *In re Van Marter*, 144 USPQ 421.

"A generic disclosure renders a claimed species prima facie obvious. *Ex parte George* 21 USPQ 2d 1057, 1060 (BPAI 1991); *In re Woodruff* 16 USPQ 2d 1934; *Merk & Co. v. Biocraft Lab. Inc.* 10 USPQ 2d 1843 (Fed. Cir. 1983); *In re Susi* 169 USPQ 423 (CCPA 1971)".

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The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, see *In re Malagari*, 182 U.S.P.Q. 549; *In re Wertheim* 191 USPQ 90 (CCPA 1976)".

The change in sequence of adding ingredients would have been obvious to one of ordinary skill in the art absent evidence to the contrary. *In re Gibson* 5 USPQ 230.

Applicants use process limitations to define the product and "product-by-process" claims do not patentably distinguish the product even though made by a different process. *In re Thorpe* 227 USPQ 964.

Evidence of unexpected results must be clear and convincing. *In re Lohr* 137 USPQ 548. Evidence of unexpected results must be commensurate in scope with the subject matter claimed. *In re Linder* 173 USPQ 356.

The references cited on the 1449 have been reviewed by the examiner and are considered to be art of interest since they are cumulative to or less than the art relied upon in the above rejections.

Any foreign language documents submitted by applicant has been considered to the extent of the short explanation of significance, English abstract or English equivalent, if appropriate.

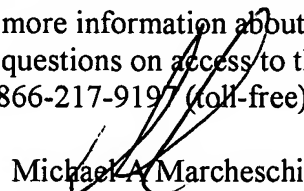
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A Marcheschi whose telephone number is (571) 272-1374. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-12331233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

3/30/05
MM


Michael A. Marcheschi
Primary Examiner
Art Unit 1755